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PROTEIN NEEDS OF THE GROWING CHILD

GENEVIEVE STEARNS, Ph.D.
Research Professor of Pediatrics
State University of Iowa

The relation of protein intake to successful skeletal formation in the growing child is becoming more and more evident.

Growth of the various tissues proceeds at differing rates during infancy and childhood. The skeletal musculature is quantitatively the largest of the nitrogenous tissues. Consequently, its rate of growth may be used as an indication of the need for protein.

Anatomical studies show that the skeletal musculature is only about one-fourth the total body weight at birth and remains at about this proportion during infancy. But by the time the child is twelve years of age, the musculature forms 40 to 45 per cent of the total body weight — the adult proportion.

Studies of creatinine excretion of infants and children confirm and extend those of the anatomical studies. The skeletal musculature appears to grow at this same rate in the body as a whole throughout infancy and until the child is about one and one-half years old.

Muscle Growth

At that time, provided the child receives ample protein, the musculature begins to grow much faster than the remainder of the body. The exact amount of muscle at that time seems to be specific for the given child but is usually between 35 and 40 per cent of the body weight.

During mid-childhood, the musculature grows slightly faster than the body as a whole. A well-fed child achieves the adult proportion of muscle to total body weight by the time he is eight years of age. A poorly-fed child achieves this amount only when and if his intake permits.

At any age during childhood muscle growth, up to these stated amounts, can be achieved rapidly by the administration of a high protein diet. Each child appears to have a maximum amount of muscle which he can achieve at a given age. After this amount is attained, excess protein intake appears to be utilized to produce energy or fat.

Retention of Protein

The preceding findings indicate that the largest protein requirement per kilogram of body weight occurs before the child is three years old. Studies of the actual retention of protein by children from birth to twelve years of age show that infants and children less than three years of age retain proportionately more protein with high intakes than with low. This efficiency of utilization increases to at least an intake of 4 to 4.5 grams per kilogram without any evidence of maximum retention.

Children who are three to eleven years old, when given ample calories and increasing amounts of protein, appear to reach a maximum retention when the intake is between 3 and 3.5 grams of protein per kilogram of body weight. Larger amounts of protein in the diet produce little or no increase in retention. Therefore, it appears uneconomic to feed more.

Doctor Stearns

Protein Needs

Children between the ages of one and three years need, and utilize well, as much protein per kilogram as do infants. An intake of 3.5 to 4.5 grams per kilogram permits excellent retention. The older child achieves his maximum retention at 3 to 3.5 grams of protein per kilogram daily. With such an intake the child will attain and maintain good muscle development.

Glances AT NUTRITION RESEARCH

A variety of types of research is needed to shed light on the many nutritional problems confronting the world today. The following abstracts illustrate several current trends in nutrition developments:

Weight Reduction — Eight overweight college women were studied during a weight reduction period. In addition, they were observed during weight maintenance periods before and after reduction. The reducing diet of not less than 1000 calories daily was adequate in all respects except calories. Post reduction diets contained an additional 400 calories. Except for limitation of sweets and fats and the addition of fruits and vegetables, there was little modification of the usual college food pattern. Weight losses averaged from one to two pounds weekly. In all cases, they were prompt and continuous. The rate of weight loss decreased during the diet period.

Lowered basal metabolism was characteristic of the reduction and post reduction periods. Apparently persons of this age, having reduced their weight, must learn to live on a lower than average calorie level. Otherwise, they will become overweight again.

—J. Am. Diet. Assoc. 22 :849,858 (Oct.) 1946.

Protein Sources—The nutritional value of protein is being recognized increasingly. As a result, protein food sources are receiving more attention. Foods are considered superior to pure amino acids and protein hydrolysates as long as they can be eaten, digested, and absorbed. In general, animal foods contain more of the "essential" amino acids than do plant proteins and consequently are more valuable. The author states that "among the less expensive protein-containing foods, milk is the most important, not only in terms of good quality protein, but in terms of other nutrients as well."

—Am. J. Nursing. 46 :531 (Aug.) 1946.

Protein Values — Food proteins still seem to be more desirable than synthesized amino acids, findings in a recent study reveal. This is true even when essential amino acids are compounded according to an analysis of the protein with which they are being compared, and when they contain as much or more nitrogen than the protein. Biological value, used as a basis for comparison, is higher with the protein than with the amino acids when both are tested on the same persons.

—J. Nut. 31 :715 (June) 1946.

Save Nutrients—How important is it to bring in milk from the doorstep promptly? It is well known that exposure of milk to sunlight can cause losses of riboflavin and ascorbic acid. Long period of exposure, strong light, warm temperature, and small-size bottles contribute to losses.

However, the authors of this recent research report discount the great losses of riboflavin reported by other studies. Their own views are based on observations of actual customer practices as well as tests of milk exposed under the conditions indicated. They found that 70 per cent of all retail milk delivered is removed from the doorstep or protected from light within five minutes after delivery. Therefore, it loses little or no riboflavin. The authors' calculated riboflavin loss of 3.25 per cent after milk is delivered to the doorstep, is considered by them to be a high estimate. But carelessness of a few customers can mean serious riboflavin deficiencies in their diets. Since milk is one of our most important sources of the vitamin, a consumer education program on its care and storage would contribute to good nutrition.

—J. Dairy Science. 29 :273 (May) 1946.

As Research Professor of Pediatrics at the State University of Iowa, Dr. Stearns has devoted most of her time to research in nutritional problems as they are related to growth and development of children, in health and in disease. She is known as a leader in the nutrition world through her publications in medical and nutrition journals and through her activities in professional societies.

Diets in the United States are on the move qualitatively—and it's upward. A recent government survey determined just how we, as a country, have eaten for the past 37 years. Our collective menu includes greatly increased amounts of protein, calcium, iron, vitamin A, thiamine, riboflavin, niacin, and ascorbic acid. In fact, the only decrease is in the caloric intake. Largely responsible for the higher levels is increased use of citrus fruit, dairy products, and leafy, green and yellow vegetables.

Last barrier in the path of the new World Health Organization is ratification of its constitution by 26 of the United Nations. Meanwhile, an interim commision is carrying out policies formulated last summer by delegates from 61 nations. War-born problems will demand first attention—providing sanitation, improving nutritional standards, and caring for the sick, wounded, and starved. But the ultimate aim of the international agency is to insure the highest possible standard of health for all people.

A COMMUNITY NUTRITION PROGRAM FOR CHILDREN

By Miriam E. Lowenberg, Ph.D., Nutritional Supervisor, Rochester Child Health Project Rochester, Minnesota

One of the first attempts to teach child nutrition on a community-wide basis is becoming an established program in Rochester, Minnesota.

As an integral part of the city's Child Health Project, the nutrition program aims to offer help to everyone in the community who might influence a child's food habits, food intake, and attitudes toward food. The over-all program is designed to promote good physical growth and emotional development among Rochester's young citizens.

Although carried on as a research activity by the Mayo Properties Association, the staff keeps in close contact with the city health department, the public schools, and the nursery school board. Much work is done with parents, public health nurses, and the fellows in pediatrics of the Mayo foundation.

I believe that it is the job of the consulting nutritionist to train key people in the community to spread teaching in nutrition. One person alone can neither teach nor confer with everyone who needs help. She can, however, provide illustrated materials such as bulletins and posters, interpret recent research in nutrition, and give constructive suggestions for better teaching.

Public Health Nurses. We hope to supplement formal training in nutrition of public health nurses so that they will be able to aid expectant mothers interpret their diets. I accompany each nurse on several interviews, work out technics, and recommend visual aids and methods of making her nutrition teaching more effective. Student dietitians from local hospitals audit these interviews.

Schools. We also hope to develop a plan for teaching nutrition in all grades of the public schools. A beginning was made last year when I planned a series of short nutrition discussions for senior high school students.

Instruction leaflets, telling specific facts about necessary foods, were prepared for the individual teachers who needed a better background in nutrition for effective teaching. In addition, I had two conferences with each teacher, talking over his or her particular problems. I also act as consultant to the school cafeteria manager. Slated for the future are many conferences and perhaps a workshop in nutrition.

Parents will be reached through groups formed at meetings held under the auspices of the local P. T. A. and through other already-organized groups.

Research. Another phase of the nutrition program concerns research that is planned. To understand better the specific community nutrition needs, I am making nutritional surveys. In a cooperative study with the obstetricians in Rochester, I am interviewing 150 pregnant women about their diets, discovering areas in which the women need to have more help concerning the specific dietary needs of pregnancy.

Dietary studies of individual children are planned, beginning when the babies are three months old and continuing until the children are five or six years of age. Among other things, investigation will be made of the reasons for food dislikes and fluctuations of appetite. Also an attempt will be made to learn more of the child's family environment with relation to food.

In an even more extensive survey, all babies born since January, 1944, are being studied carefully to determine what factors affect their growth and development. We hope to make this a twenty year plan, so that we will be able to observe the children throughout their entire growth period.

Therapeutic Program. When individual children have difficulties in feeding, the mother may be sent to me by a physician of one of the Child Health Clinics. Problems of older children in a family may affect younger brothers and sisters. Therefore, I also offer my services to mothers whose school age children have feeding problems.

General Plan. In planning and organizing the nutrition program for the Rochester Child Health Project, the attempt is to offer nutrition help to all groups. In addition, we plan to keep careful records and make critical evaluations constantly so that knowledge will be available concerning the effectiveness of the methods used and we will have a basis for improving them.

TEACH THEM TO COUNT THE "POINTS"— FOR BETTER SCHOOL LUNCHES

By Floy Eugenia Whitehead, Associate Professor of Home Economics Louisiana State University, Baton Rouge

Teachers, principal, school lunch supervisors, lunch room workers, and several mothers from a community sat around one of the tables in a lunch room to count points. The group counted points present in a six-week record of lunches served at their school.

As a basis, they used a "point system" for evaluating lunches. This system was developed as a part of a research project in nutrition education carried on by the Louisiana Agricultural Experiment Station. It is a simple method for determining the "protective" value of meals—usable by teachers, pupils, and parents as well as school lunch personnel.

Protective Foods. Briefly, the "point system" is one which gives one point for each serving of "protective" food. Protective foods are those listed in the United States Department of Agriculture's Basic Seven food groups. If school lunches have as many as seven "points" representing all seven of the food groups they are considered to be good. But the "point system" is not too rigid. For example, it allows a point for any fresh fruit, whether it is citrus or not. And if there are two cooked, or two raw, vegetables served, a point is given for each.

Once this group learned to count points the next step was checking to make sure that at least one of those points represented a good source of vitamin C every day. They were concerned about vitamin C because a recent survey of food habits in their community showed this to be an outstanding dietary deficiency. A list of vitamin C foods readily available in

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—that only 7 per cent of the area of the globe is under cultivation?

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—that a 100 per cent increase in the world milk supply will be necessary to meet even the first nutritional goals of the Food and Agriculture Organization?

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—that powdered orange juice, home from the wars, soon will be available? Reports say it retains the flavor and vitamin content of fresh juice.

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—that butter is a barter item in Germany? A tenor of the Berlin Municipal Opera refused a guest appearance. Reason? The manager would not guarantee him a pound of butter as one of the remunerations.

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—that a portable picnic refrigerator has food compartments and freezes ice cubes? Dry ice is the refrigerant.

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—that Pennsylvania makes more ice cream than any other state? Ten of every 100 gallons come from the Keystone State.

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—that one of the greatest tearjerkers of all time is fading from the picture? Now peeled, cooked onions may be purchased—all ready to heat and serve.

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—that the average American must raise his cheese consumption 40 per cent; ice cream, 70 per cent; and milk, 50 per cent over 1945 levels to meet his full nutritional needs, a government survey reveals?

THINGS YOU'LL LIKE TO READ

NATIONAL SCHOOL LUNCH PROGRAM, PA-19—Office of Information, U. S. Department of Agriculture, Washington, D. C. 1946.

A brief, clear explanation is given of how to take advantage of National School Lunch Act funds. The 4-page folder is a guide for prospective program sponsors.

A RESUME OF NEW DEVELOPMENTS IN NUTRITION RESEARCH—Jennie I. Rowntree, Director, School of Home Economics, University of Washington, Seattle. June 1946. 15 cents.

In this address, before the National Dairy Council Summer Conference, Dr. Rowntree emphasizes the relation of nutrition developments to world feeding problems. A copy may be obtained from the National Dairy Council, 111 North Canal Street, Chicago 6.

SCHOOL LUNCH RECIPES FOR 100—Office of Information, U. S. Department of Agriculture, Washington 25, D. C. 1946.

This set of sixty-seven 5" x 8" cards presents basic recipes for school lunch use. Included are soups, chowders, main dishes, salads, salad dressings, breads, desserts, and sauces. Additional recipes for the file will be published from time to time.

WORLD FOOD SURVEY—Information Service, Food and Agriculture Organization of the United Nations, 2841 McGill Terrace, N. W., Washington 8, D. C. July, 1946.

Past, present, and possible future of the world food situation is discussed in this FAO publication. A glance at the figures and tables will give you a quick picture of this timely information.

TEACH THEM TO COUNT THE "POINTS" — FOR BETTER SCHOOL LUNCHES

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that community was secured from the Louisiana Agricultural Experiment Station.

Experimental Stage. This "point system" has been used in the schools of Ascension Parish, Louisiana, for almost two years. It is still in the experimental stage. But its use has developed a better understanding of applied nutrition for those who have used it. Such understanding is evidenced by the improved lunches they now serve. There are weaknesses to the "point system" as it now stands. However, it is hoped that the system's continued use will point the way toward improvements.

Already the change is noticeable. In October of 1944, a typical lunch at an Ascension Parish School consisted of meat and vegetable stew, cooked cabbage, jelly sandwich made with white bread, and milk. The total score was three points.

Improved Menu. But one of this year's typical menus tells a different story. Such items as meat loaf, carrots strips, turnip greens, and whole wheat bread boost the lunch's value up to the recommended total of seven.

Children in Ascension Parish now form the habit of choosing good lunches by learning the importance of the "protective" foods shown on the government's Basic Seven chart. The accompanying picture illustrates one method that is used. The children study demonstration material which helps them to understand nutritional values.